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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,837	09/29/2003	Guy G. Morneault	51995-7	3519

23971 7590 01/22/2009

BENNETT JONES LLP
C/O MS ROSEANN CALDWELL
4500 BANKERS HALL EAST
855 - 2ND STREET, SW
CALGARY, AB T2P 4K7
CANADA

EXAMINER	
CHORBAJI, MONZER R	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
01/22/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/671,837	MORNEAULT ET AL.	
	Examiner	Art Unit	
	MONZER R. CHORBAJI	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/9/08*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-10,13-22 and 41-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-10,13-22 and 41-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This non-final action is in response to the amendment received on 10/9/08

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 6-7, 9, 20, 42-43, 45-48, 51, 53-54 and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnott (U.S.P.N. 2,279,810) in view of Potapenko (U.S.P.N. 3,107,974).

Regarding claim 1, Arnott discloses an apparatus (radiation chamber as shown in figure 6) for decontaminating air within an enclosed workspace (air within rooms of a building as mentioned on page 1, left column, lines 1-12), the enclosed workspace (a room within a building) located downstream and in fluid communication with the apparatus (see the duct in figure 6 labeled as outgoing air), the apparatus comprising: a housing (unlabeled housing surrounding the UV lamps as shown in figure 6) containing an array of ultraviolet lamps (unlabeled UV lamps in figure 6) mounted within an enclosure (unlabeled enclosed volume within housing) in the housing, the enclosure having an intake aperture (unlabeled aperture of incoming air duct as shown in figure 6) and an exhaust aperture (unlabeled aperture of outgoing air as shown in figure 6), the housing and the array forming an airflow processor (page one, left column, lines 3-5) such that uncontaminated air (page one, right column, lines 21-24) entering the intake aperture (see duct labeled incoming air as shown in figure 6) passes through the array before exiting the exhaust aperture (see unlabeled UV lamps in figure 6); an air flow motivator (Arnott on page 2, right column, lines 62-63, teaches that air has velocity moving within the duct system such that one would recognize that air conditioning systems have fans to move air through the duct system) urging

airflow through the housing and the array from the intake aperture and out through the exhaust aperture; a downstream conduit in fluid communication between the exhaust aperture and the workplace (unlabeled conduit through which sterilized outgoing air travels through the duct system to various rooms within a building) for directing airflow into the workplace after being processed in the airflow processor, wherein the intake aperture (unlabeled aperture of duct having incoming air as shown in figure 6) is positionable relative to the workspace (a room in a building as taught by Arnott on page one, left column, lines 3-5) so that airflow entering the intake aperture is uncontaminated air (page one, right column, lines 22-23).

Arnott fails to teach that the intake aperture exposed to only substantially uncontaminated air. Potapenko sterilizes air within ducts using UV light units (col.4, lines 20-22) and further teaches in one embodiment that the UV light unit is used to sterilize outside air (considered as substantially uncontaminated air) entering a building or a room (col.4, lines 43-44 and figure 1:35) so that the air atmosphere of an entire hospital or other building is decontaminated (col.4, lines 40-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the intake aperture in Arnott with outside air so that the air atmosphere of an entire hospital or other building is decontaminated as explained by Potapenko (col.4, lines 40-43).

Regarding claim 41, Arnott discloses a method for decontaminating contaminated air (considered recirculated air within a duct) in a workspace (first page, left column, lines 1-5), the method comprising: providing a housing

(unlabeled housing surrounding the UV lamps as shown in figure 6) including an enclosure (unlabeled enclosed volume within housing) in the housing, the enclosure having an intake aperture (unlabeled aperture of incoming air duct as shown in figure 6) and an exhaust aperture (unlabeled aperture of outgoing air as shown in figure 6); providing an array of ultraviolet lamps (unlabeled UV lamps in figure 6) mounted within the enclosure (unlabeled enclosed volume within housing), the housing and the array forming an airflow processor (page one, left column, lines 3-5) such that contaminated air (page one, right column, lines 21-24) entering the intake aperture (see duct labeled incoming air as shown in figure 6) passes through the array before exiting the exhaust aperture (see unlabeled UV lamps in figure 6); and directing the treated airflow (UV irradiated air) after it has already passed through the housing into the workspace to mix with contaminated air in the enclosed workspace (page one, left column, lines 9-14).

Arnott fails to teach passing airflow of uncontaminated air through the housing and the array of UV lamps. Potapenko sterilizes air within ducts using UV light units (col.4, lines 20-22) and further teaches in one embodiment that the UV light unit is used to sterilize outside air (considered as the uncontaminated air) entering a building or a room (col.4, lines 43-44 and figure 1:35) so that the air atmosphere of an entire hospital or other building is decontaminated (col.4, lines 40-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the intake aperture in Arnott with outside air so that the air atmosphere of an entire hospital or other building is decontaminated as explained by Potapenko (col.4, lines 40-43).

Regarding claim 2, Arnott discloses that the apparatus further includes an intake conduit (conduit containing incoming air as shown in figure 6) having an upstream that is exposed to ambient air (page one, right column, lines 20-23) external to the workspace and an opposite downstream end (conduit containing outgoing air as shown in figure 6) mounted to the intake aperture (both conduits are connected to each other) in fluid communication with the array (unlabeled UV lamps in figure 6).

Arnott fails to teach that the upstream end exposed to only ambient air. Potapenko sterilizes air within ducts using UV light units (col.4, lines 20-22) and further teaches in one embodiment that the UV light unit is used to sterilize outside air (considered as the uncontaminated air) entering a building or a room (col.4, lines 43-44 and figure 1:35) so that the air atmosphere of an entire hospital or other building is decontaminated (col.4, lines 40-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the intake aperture in Arnott with outside air so that the air atmosphere of an entire hospital or other building is decontaminated as explained by Potapenko (col.4, lines 40-43).

Regarding claims 6-7, Arnott sterilizes air within ducts of an air conditioning system within a building (page 1, left column, lines 3-5). However, Arnott is silent as to having vertical ducts and rigid ducts. Such would appear to be conventional in any air conditioning system. One of ordinary skill in the art would readily recognize that conventional air handling systems (HVAC) include

vertical and horizontal rigid ducts (such as main ducts) that connects across a certain floor or across floors in a building.

Regarding claim 9, Arnott discloses that the airflow motivator is a fan (Arnott on page 2, right column, lines 62-63, teaches that air has velocity moving within the duct system such that one would recognize that air conditioning systems have fans to move air through the duct system).

Regarding claim 20, Arnott discloses that the frame (unlabeled frame in figure 7 having cover) includes apertures (unlabeled apertures through both ends of UV lamps are inserted into) through which the upper ends of the stick lamps extend.

Regarding claims 42-43, Arnott discloses providing an inlet duct (duct having incoming air shown in figure 6) is provided where the inlet duct having an upstream end (Arnott sterilizes air within ducts of an air conditioning system within a building, page 1, left column, lines 3-5, such that one of ordinary skill in the art would readily recognize that conventional air handling systems (HVAC) include upstream and downstream duct system) with an opening therein and an opposite downstream end mounted to the intake aperture, the duct being in fluid communication with the array (incoming duct that includes incoming air in figure 6 is in fluid communication with UV lamps). In addition, Arnott sterilizes air within ducts of an air conditioning system within a building (page 1, left column, lines 3-5) such that one of ordinary skill in the art would readily recognize that conventional air handling systems (HVAC) include rigid inlet ducts that extends

vertically or in various different orientations adjacent the housing where the opening is positioned above the housing.

Regarding claims 45-46, and 51, Arnott discloses an array of UV stick lamps (UV lamps in figure 6) such that the lamps are positioned with their long axis parallel to each other and their long axis are vertically oriented (see figure 7).

Regarding claims 47-48, Arnott on page 2, right column, lines 62-63, teaches that air has velocity moving within the duct system and also teaches (first page, right column, lines 20-24) adding fresh air (considered as the uncontaminated airflow) into the ducting system from outside the building through the housing and the array of UV lamps from the intake aperture and out through the exhaust aperture such that one would recognize that air conditioning systems have fans to move air through the duct system.

Regarding claims 53-54, Arnott discloses an array of ultraviolet lamps that includes a plurality of stick lamps (see unlabeled UV lamps in figure 7), where at least some stick lamps are installed with their lower ends secured in a lamp rack assembly (unlabeled UV lamps in figure 7 have their ends secured in unlabeled rack having a cover) and their upper ends installed in a frame having apertures (see figure 7).

Regarding claim 56, Arnott discloses an array of ultraviolet lamps including a plurality of stick lamps (see unlabeled UV lamps in figure 7), where at least some stick lamps are installed with their lower ends secured in a lamp rack assembly (unlabeled UV lamps in figure 7 have their ends secured in unlabeled

rack having a cover) and their upper ends installed in a frame such that the long axis of each of the at least some stick lamps extends vertically (unlabeled UV lamps in figure 7 vertically extends through the unlabeled height of the duct);

Regarding claim 57, Arnott teaches introducing fresh air (page 1, right column, lines 20-24; considered the airflow of non-contaminated air) external to the enclosed workspace.

5. Claims 5, 8 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnott (U.S.P.N. 2,279,810) in view of Potapenko (U.S.P.N. 3,107,974) as applied to claims 1, 2, 42, and further in view of Crook (U.S.P.N. 6,354,937).

Regarding claims 5, 8, and 44, Arnott sterilizes air within ducts of an air conditioning system within a building (page 1, left column, lines 3-5) such that one of ordinary skill in the art would readily recognize that conventional air handling systems (HVAC) include upstream and downstream duct system. Arnott and Potapenko fail to teach the use of a flexible conduit.

Crook teaches that HVAC includes flexible hoses (col.1, lines 6-8) in order to provide either straight or bent ducts (col.2, lines 3-6). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified apparatus and method in Arnott/Potapenko with flexible ducts, because they can provide either straight or bent ducts as explained by Crook (col.2, lines 3-6).

6. Claims 10, 21-22, 49-50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnott (U.S.P.N. 2,279,810) in view of

Potapenko (U.S.P.N. 3,107,974) as applied to claims 1, 41, 51, and further in view of Tabatabaie-Raissi et al (U.S.P.N. 5,842,110).

Regarding claims 10, 49 and 52, Arnott and Potapenko fail to teach that the lamps are positioned in offset positions relative to one another. Tabatabaie-Raissi position UV lamps in offset positions (figure 2A:331-334) in order to maximize generation of the vapor-phase free radical oxidizing species and to minimize mass transfer effects (col.3, lines 52-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified apparatus and method in Arnott/Potapenko with UV lamps in an offset arrangement in order to maximize generation of the vapor-phase free radical oxidizing species and to minimize mass transfer effects as explained by Tabatabaie-Raissi (col.3, lines 52-55).

Regarding claims 21 and 50, Arnott discloses an array of vertical ultraviolet lamps that includes a plurality of stick lamps (see unlabeled UV lamps in figure 7), where at least some stick lamps are installed with their lower ends secured in a lamp rack assembly (unlabeled UV lamps in figure 7 have their ends secured in unlabeled rack having a cover) and their upper ends installed in a frame having apertures (see figure 7).

Regarding claim 22, Arnott shows that each frame (each frame of UV lamps as shown in figure 6) is spaced apart.

7. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arnott (U.S.P.N. 2,279,810) in view of Potapenko (U.S.P.N. 3,107,974) as applied to claim 41, and further in view of Dall'Armi et al (U.S.P.N. 6,863,078).

Arnott and Potapenko fail to teach providing a lamp cleaning spray down system and using the lamp cleaning spray down system to clean the ultraviolet lamps. Dall'Armi discloses an automated UV lamp cleaning spray down system (figure 1:10, 75 and 35 and col.4, lines 59-63), because sleeves covering UV lamps are known to become fouled over time and they must be cleaned in order to optimize their performance (col.1, lines 39-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Arnott/Potapenko with the UV lamp cleaning device, because sleeves covering UV lamps are known to become fouled over time and they must be cleaned in order to optimize their performance as explained by Dall'Armi (col.1, lines 39-45).

8. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soremark (U.S.P.N. 6,358,478) in view of Potapenko (U.S.P.N. 3,107,974).

Regarding claim 13, Soremark discloses a method of decontaminating air (col.1, lines 12-14) contained within an enclosed workspace (col.5, lines 39-41) comprising: generating hydroxyl radicals (col.4, lines 50-56) in an airflow of (as air enters enclosure 1 in figure 1, it is decontaminated by being exposed to UV light as explained in col.5, lines 15-17 while hydroxyl radicals are generated in the decontaminated air with UV); and urging the airflow (figure 1:7) into the workspace after the generating of the hydroxyl radicals in the airflow (col.5, lines 24-35). In addition, Soremark teaches that the air sterilizing apparatus is modular and is simple to be adapted to different conditions (col.6, lines 27-29).

Soremark fails to teach using non-contaminated air. Potapenko sterilizes air within ducts using UV light units (col.4, lines 20-22) and further teaches in one embodiment that the UV light unit is used to sterilize outside air (considered as non-contaminated air) entering a building or a room (col.4, lines 43-44 and figure 1:35) so that the air atmosphere of an entire hospital or other building is decontaminated (col.4, lines 40-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method in Soremark with outside air so that the air atmosphere of an entire hospital or other building is decontaminated as explained by Potapenko (col.4, lines 40-43).

Regarding claim 14, Soremark discloses providing a housing (figure 1:1) containing UV lamps (col.5, lines 15-17) and motivating the airflow through the housing (figure 1:7) so as to generate hydroxyl radicals in the airflow (col.5, lines 23-27) as the airflow passes through the housing (figure 1:1).

Regarding claim 15, Soremark discloses that the housing (figure 1:1) includes multiple of lamps (col.5, lines 16-17 that is considered as an array) and further providing a downstream conduit (part of enclosure 1 after fan 7 in figure 1) in fluid communication between the housing (1) and the workspace (col.5, lines 39-42) and flowing the air flow downstream through the conduit (figure 1:7) so as to direct the airflow into the workspace.

Regarding claim 16, Soremark teaches disinfecting air flowing within a building (col.5, lines 39-42) such that it would have been obvious to one of ordinary skill in the art that conventional building air handling systems where

those systems are known to incorporate fresh ambient air (considered non-decontaminated) with recycled internal air.

Regarding claims 17-18, Soremark teaches urging the airflow (figure 1:7) into the workspace (col.5, lines 39-42) and that the enclosed workspace is odor containing (smoking rooms and toilets are odor containing enclosed spaces as described in col.5, line 42).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soremark (U.S.P.N. 6,358,478) in view of Potapenko (U.S.P.N. 3,107,974) as applied to claim 14 and further in view of Arnott (U.S.P.N. 2,279,810).

Soremark and Potapenko fail to teach that the UV lamps are stick lamps, each stick lamp installed with its lower end secured in a lamp rack assembly and its upper end installed in a frame such that the long axis of each stick lamp is vertically oriented. Arnott discloses an array of vertical ultraviolet lamps that includes a plurality of stick lamps (see unlabeled UV lamps in figure 7) in order to efficiently sterilize the air in conditioning ducts that is free of bacteria and other microorganisms carried thereby (page one, left column, lines 10-14). Furthermore, Arnott discloses that the stick lamps are installed with their lower ends secured in a lamp rack assembly (unlabeled UV lamps in figure 7 have their ends secured in unlabeled rack having a cover) and their upper ends installed in a frame having apertures (see figure 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Soremark/Potapenko with the UV lamp arrangement in order to efficiently sterilize the air in conditioning ducts that is free of bacteria and other

microorganisms carried thereby as explained by Arnott (page one, left column, lines 10-14).

Response to Arguments

10. Applicant's arguments see pages 10-18 of the Remarks section, filed on 10/9/08, with respect to the rejections of claims 1-2, 5-10, 13-22, 41-55 under anticipation/obviousness over Arnott; anticipation/obviousness by Soremark and other references have been fully considered and are persuasive. Therefore, the rejections has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of Potapenko as shown above.

Note that all of Applicant's arguments stated on pages 10-19 of the Remarks section are directed to the newly added features. More specifically, this case is made non-final in order to address the limitation of "non-contaminated air" in unamended claim 13.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571)272-1271. The examiner can normally be reached on M-F 9:00-5:30.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. R. C./

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797